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DETERMINATION OF PHYTOPLANKTON BIOMASS IN COASTAL WATERS BY REMOTE SENSING OF CHLOROPHYLL *A* FLUORESCENCE (AASERT)

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Award # N00014-97-1-0645

LONG-TERM GOALS

My long-term goals are to understand the causes of and mechanisms responsible for variability in phytoplankton abundance, primary production, and species composition.

OBJECTIVES

The objectives of this project are to train a graduate student in biological, hydrological optics and to better understand the relationship among the photosynthetic absorption coefficient, the photoprotective absorption coefficient, and chlorophyll *a* fluorescence. The ASSERT graduate student (Ms. Weiss) will address problems relating absorption and fluorescence signals to phytoplankton biomass and productivity. Her results will contribute to the interpretation of hyperspectral remote sensing signals.

APPROACH

Remote sensing estimations of phytoplankton biomass are important for biological models of primary production and optical models of radiation attenuation. The ASSERT graduate student will build on the work of Culver (1996) and address issues related to remote sensing of phytoplankton biomass and productivity: chlorophyll *a* fluorescence, photosynthetic spectral absorption coefficients, and photoprotective spectral absorption coefficients.

WORK COMPLETED

Funding was awarded in late FY 97. The ASSERT student is just beginning her graduate research. No work has been completed as of the end of FY 97.

RESULTS

Funding was awarded in late FY 97. No results are available as of the end of FY 97.

IMPACT

Research on the optical signals associated with phytoplankton will contribute to interpretation of hyperspectral remote sensing from aircraft and satellites.

TRANSITIONS

Funding was awarded in late FY 97; transitions are premature. However, a knowledge of the dynamics of the two components of the phytoplankton absorption coefficient and their relationship to chlorophyll *a* fluorescence has important implications for hyperspectral remote sensing.

RELATED PROJECTS

This ASSERT award will support a graduate student to work in association with ONR award # N00014-96-1-0060.

REFERENCES

Culver, M. E. 1996. Applications of chlorophyll *a* fluorescence in bio-optical models of phytoplankton biomass and productivity. University of Washington dissertation. 158 pp.